

What is claimed is:

1 1. A mobile agent transfer system for portable devices  
2 comprising:

3 a server;

4 a portable device; and

5 wherein a mobile agent is transferred between said server  
6 and said portable device;

7 wherein said server has a configuration so as to transfer,  
8 to said portable device, a place code used to implement, on a side  
9 of said portable device, an environment in which said mobile agent  
10 is able to be executed when said mobile agent is transferred from  
11 said server to said portable device; and

12 wherein said portable device has a configuration so as to  
13 implement, on a side of said portable device and based on said  
14 place code transferred from said server, an environment in which  
15 said mobile agent is able to be executed.

1 2. The mobile agent transfer system for portable devices  
2 according to Claim 1, wherein said place code is used to implement,  
3 on said portable device, an agent unarchiving section used to  
4 reconstruct said mobile agent based on information transmitted  
5 from said server, a portable device side calculation processing  
6 section to run said mobile agent reconstructed by said agent  
7 unarchiving section, and an agent transmitting section used to  
8 transmit said mobile agent having completed operations in said  
9 portable device side calculation processing section to said  
10 server and wherein said portable device has a program control  
11 section to implement, on said portable device, said agent

12 unarchiving section, said portable device side calculation  
13 processing section, said agent transmitting section based on said  
14 place code transmitted from said server.

1 3. A mobile agent transfer system for mobile communicating  
2 devices comprising:

3 a server;

4 a mobile communicating device;

5 an information transfer device to connect said mobile  
6 communicating device to said server; and

7 wherein a mobile agent is transferred between said server  
8 and said mobile communicating device through said information  
9 transfer device;

10 wherein said server has a server side calculation  
11 processing section to run said mobile agent, an agent transferring  
12 section used to transfer, to said mobile communicating device,  
13 information about an internal state of said mobile agent, a  
14 program code of said mobile agent, a place code used to implement,  
15 on said mobile communicating device, an agent reconstructing  
16 section, mobile communicating device side calculation processing  
17 section and agent transmitting section, and an agent receiving  
18 section used to retrieve said mobile agent transferred from said  
19 mobile communicating device and to put said mobile agent into a  
20 state where said mobile agent is able to start operations in said  
21 server side calculation processing section, and

22 wherein said mobile communicating device has a program  
23 acquiring section used to acquire said information about an  
24 internal state of said mobile agent, said program code of said  
25 mobile agent, and said place code transmitted from said server

26 and a program control section to implement, on said mobile  
27 communicating device, said agent reconstructing section, said  
28 mobile communicating device side calculation processing section  
29 and said agent transmitting section, based on said place code  
30 acquired by said program acquiring section, wherein said agent  
31 reconstructing section has a configuration so as to reconstruct  
32 said mobile agent based on said information about internal states  
33 of said mobile agent and said program code of said mobile agent,  
34 wherein said mobile communicating device side calculation  
35 processing section has a configuration so as to run said mobile  
36 agent reconstructed by said agent reconstructing section and  
37 wherein said agent transmitting section has a configuration so  
38 as to transmit said mobile agent having completed operations in  
39 said portable side calculation processing section to said server.

1 4. The mobile agent transfer system for mobile communicating  
2 devices according to Claim 3, wherein said server has a standby  
3 list creating section used to transmit, to said mobile  
4 communicating device, a standby list showing mobile agents being  
5 in a standby state to be transferred to said mobile communicating  
6 device, wherein said mobile communicating device has a standby  
7 list displaying section used to provide said standby list  
8 transmitted from said server to a user or other device and to notify  
9 said program acquiring section of said mobile agent selected by  
10 said user or other device out of mobile agents indicated by said  
11 provided standby list, and wherein said program acquiring section  
12 has a configuration so as to make a request for acquiring said  
13 mobile agent notified by said standby list displaying section to  
14 said server.

1 5. The mobile agent transfer system for mobile communicating  
2 devices according to Claim 3, wherein said server has a movement  
3 number managing section used to create and manage a movement  
4 number required to ignore messages other than a message that has  
5 first arrived when a plurality of messages each having same  
6 contents to transfer a mobile agent has reached said agent  
7 receiving section from said agent transmitting section in said  
8 mobile communicating device due to a failure of a network.

1 6. The mobile agent transfer system for mobile communicating  
2 devices according to Claim 3, wherein said agent transferring  
3 section has an agent waiting section used to manage information  
4 about an identifier of a mobile agent and location of a program  
5 code of said mobile agent being in a standby state to be transferred  
6 to said mobile communicating device, a program description file  
7 creating section used to make a request of a program archive  
8 creating section to create an archive when a request for a program  
9 description file for a mobile agent is made from said program  
10 acquiring section and to return said program description file  
11 containing a location of said archive created by said program  
12 archive creating section to said program acquiring section, and  
13 a program archive creating section used to create, in response  
14 to a request from said program description file creating section,  
15 an archive containing a program code of a mobile agent,  
16 information about an internal state of said mobile agent, and a  
17 place code, and to return, in response to a request from said  
18 program acquiring section, said archive.

1 7. A method for transferring a mobile agent for portable

2 devices between a portable device and a server, said method  
3 comprising:

4 a step in which said server transfers, to said portable  
5 device, a place code used to implement, on a side of said portable  
6 device, an environment in which said mobile agent is able to be  
7 executed when said mobile agent is transferred from said server  
8 to said portable device; and

9 a step in which said portable device implements, on said  
10 portable device and based on said place code transferred from said  
11 server, an environment in which said mobile agent is executed.

1 8. The method for transferring the mobile agent for portable  
2 devices according to Claim 7, wherein said place code is used to  
3 implement, on said portable device, an agent reconstructing  
4 section used to reconstruct said mobile agent based on information  
5 transmitted from said server, a portable device side calculation  
6 processing section to run said mobile agent reconstructed by said  
7 agent reconstructing section, and an agent transmitting section  
8 used to transfer said mobile agent having completed operations  
9 in said portable device side calculation processing section to  
10 said server and wherein said portable device has a program control  
11 section to implement, on said portable device and based on said  
12 place code transmitted from said server, said agent  
13 reconstructing section, said portable device side calculation  
14 processing section and said agent transmitting section.

1 9. A method for transferring a mobile agent for portable  
2 devices for transferring said mobile agent between a portable  
3 device and a server, said method comprising:

4 a step in which said server transfers information about an  
5 internal state of a mobile agent, a program code of said mobile  
6 agent, and a place code used to implement, on said portable device,  
7 an agent reconstructing section, portable device side calculation  
8 processing section, and agent transmitting section, to said  
9 portable device;

10 a step in which said portable device implements, based on  
11 said place code transmitted from said server, said agent  
12 reconstructing section, said portable device side calculation  
13 processing section, and said agent transmitting section;

14 a step in which said agent reconstructing section  
15 reconstructs said mobile agent, based on said information about  
16 said internal states and said program code of said mobile agent  
17 transmitted from said server;

18 a step in which said portable device side calculation  
19 processing section executes said mobile agent that has been  
20 reconstructed by said agent reconstructing section; and

21 a step in which said agent transmitting section transmits  
22 said mobile agent having completed operations in said portable  
23 device side calculation processing section.

1 10. The method for transferring the mobile agent for portable  
2 devices according to Claim 9, wherein said server transmits, to  
3 said portable device, a standby list showing mobile agents being  
4 in a standby state to be transferred to said portable device and  
5 wherein said portable device provides said standby list  
6 transmitted from said server to a user or other device and to make  
7 a request of said server for said mobile agent selected by said  
8 user or other device out of mobile agents indicated by said

9 provided standby list.

1 11. The method for transferring the mobile agent for portable  
2 devices according to Claim 9, wherein said server creates and  
3 manages a movement number required to ignore messages other than  
4 a message that has first arrived when a plurality of messages each  
5 having same contents to transfer a mobile agent has reached said  
6 agent receiving section from said portable device due to a failure  
7 of a network.

1 12. A program for implementing a mobile agent transfer system  
2 for portable devices to enable a mobile agent to be transferred  
3 between a computer for a portable device and a computer for a server  
4 comprising:

5 processing of having said computer for said server transfer  
6 a place code used to implement, on said computer for said portable  
7 device, an environment in which said mobile agent is able to be  
8 executed when said mobile agent is transferred to said computer  
9 for said portable device; and

10 processing of having said computer for said portable device  
11 implement, on said computer for said portable device and based  
12 on a place code transferred from said computer for said server,  
13 an environment in which said mobile agent is able to be executed.

1 13. A program for implementing a mobile agent transfer system  
2 for portable devices to enable a mobile agent to be transferred  
3 between a computer for a portable device and a computer for a server  
4 comprising:

5 processing of having said computer for said server function

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6 as a server computer side calculation processing section to run  
7 said mobile agent, as an agent transferring section to transfer,  
8 to said computer for said portable device, information about  
9 internal states of said mobile agent and about a program code of  
10 said mobile agent and a place code used to implement, on said  
11 computer for said portable device and based on internal states  
12 and program code of said mobile agent transmitted from said  
13 computer for said server, an agent unarchiving section to  
14 reconstruct said mobile agent, portable device side calculation  
15 processing section to run said mobile agent reconstructed by said  
16 agent unarchiving section, and an agent transmitting section to  
17 transmit said mobile agent having completed operations in said  
18 portable device side calculation processing section to said  
19 computer for said server, and as an agent receiving section to  
20 unarchive said mobile agent transferred from said computer for  
21 said portable device and to put said mobile agent into a state  
22 where said mobile agent is able to start operations on said server  
23 computer side calculation processing section, and

24 processing of having said computer for said portable device  
25 function as a program acquiring section to acquire information  
26 about internal states and program code of said mobile agent  
27 transmitted from said computer for said server and a place code,  
28 and as a program control section to implement, on said computer  
29 for said portable device and based on said place code acquired  
30 by said program acquiring section, said agent unarchiving section,  
31 said portable device side calculation processing section, and  
32 said agent transmitting section.

1 14. A storage medium storing a program for implementing a mobile

2 agent transfer system for portable devices to enable a mobile  
3 agent to be transferred between a computer for a portable device  
4 and a computer for a server comprising:

5 processing of having said computer for said server transfer  
6 a place code used to implement, on said computer for said portable  
7 device, an environment in which said mobile agent is able to be  
8 executed when said mobile agent is transferred to said computer  
9 for said portable device; and

10 processing of having said computer for said portable device  
11 implement, on said computer for said portable device and based  
12 on a place code transferred from said computer for said server,  
13 an environment in which said mobile agent is able to be executed.

1 15. A storage medium storing a program for implementing a mobile  
2 agent transfer system for portable devices to enable a mobile  
3 agent to be transferred between a computer for a portable device  
4 and a computer for a server comprising:

5 processing of having said computer for said server function  
6 as a server computer side calculation processing section to run  
7 said mobile agent, as an agent transferring section to transfer,  
8 to said computer for said portable device, information about  
9 internal states of said mobile agent and about a program code of  
10 said mobile agent and a place code used to implement, on said  
11 computer for said portable device and based on internal states  
12 and program code of said mobile agent transmitted from said  
13 computer for said server, an agent unarchiving section to  
14 reconstruct said mobile agent, portable device side calculation  
15 processing section to run said mobile agent reconstructed by said  
16 agent unarchiving section, and an agent transmitting section to

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17 transmit said mobile agent having completed operations in said  
18 portable device side calculation processing section to said  
19 computer for said server, and as an agent receiving section to  
20 unarchive said mobile agent transferred from said computer for  
21 said portable device and to put said mobile agent into a state  
22 where said mobile agent is able to start operations on said server  
23 computer side calculation processing section, and

24 processing of having said computer for said portable device  
25 function as a program acquiring section to acquire information  
26 about internal states and program code of said mobile agent  
27 transmitted from said computer for said server and a place code,  
28 and as a program control section to implement, on said computer  
29 for said portable device and based on said place code acquired  
30 by said program acquiring section, said agent unarchiving section,  
31 said portable device side calculation processing section, and  
32 said agent transmitting section.

1 16. A mobile agent transfer system for mobile communicating  
2 devices comprising:

3 a server;

4 a mobile communicating device; and

5 wherein a mobile agent is transferred between said server  
6 and said mobile communicating device;

7 wherein said server has a configuration so as to transfer,  
8 to said mobile communicating device, a place code used to  
9 implement, on a side of said mobile communicating device, an  
10 environment in which said mobile agent is able to be executed when  
11 said mobile agent is transferred from said server to said mobile  
12 communicating device; and

13 wherein said mobile communicating device has a  
14 configuration so as to implement, on a side of said mobile  
15 communicating device and based on said place code transferred from  
16 said server, an environment in which said mobile agent is able  
17 to be executed.

1 17. The mobile agent transfer system for mobile communicating  
2 devices according to Claim 16, wherein said place code is used  
3 to implement, on said mobile communicating device, an agent  
4 reconstructing section to reconstruct said mobile agent based on  
5 information transmitted from said server, a mobile communicating  
6 device side calculation processing section to run said mobile  
7 agent reconstructed by said agent reconstructing section, and an  
8 agent transmitting section used to transmit said mobile agent  
9 having completed operations in said portable device side  
10 calculation processing section to said server and wherein said  
11 mobile communicating device has a program control section to  
12 implement, on said mobile communicating device, said agent  
13 reconstructing section, said mobile communicating device side  
14 calculation processing section, said agent transmitting section  
15 based on said place code transmitted from said server.